A WOODLOUSE NEW TO BRITAIN: *ANCHIPHILOSCIA PILOSA* (BUDDE-LUND, 1913) (ONISCIDEA: PHILOSCIIDAE) IN A HEATED BUTTERFLY HOUSE IN BEDFORDSHIRE

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SUMMARY

The woodlouse *Anchiphiloscia pilosa* (Budde-Lund) is reported new to Britain from a butterfly house in Bedfordshire. A description with illustrations is provided to enable identification. It is a widespread species, known mostly from islands in the Indian and Pacific oceans. Potential confusion with *A. balssi* (Verhoeff), a similar species recorded from European glasshouses, is highlighted. *A. pilosa* is a non-native species in Europe and is very unlikely to be able to survive outdoors in the British climate.

THE DISCOVERY

On 16th January 2017, MGT visited the Butterfly House (TL005176) at Whipsnade Zoo, Bedfordshire (VC 30). This Butterfly House was opened in 2015 and houses an impressive range of spectacular tropical butterflies which fly in a heated, humidified environment, populated with a range of exotic trees and shrubs. From just two or three handfuls of leaf-litter from beneath the shrubs, four adults (two males, two females) and one immature of an unfamiliar, attractively-patterned woodlouse) were collected.

The excitement at finding an unfamiliar woodlouse was tempered with a fear that it could be very difficult to identify. With a three-segmented antennal flagellum, stepped pereion-pleon outline and weakly developed head lobes, this appeared to be a member of the Philosciidae. Four philosciids are known from British heated glasshouses: *"Setaphora" patiencei* (Bagnall) and *Burmoniscus meeusei* (Holthuis) have been known since 1908 and 1947 respectively (Gregory, 2009), and *Chaetophiloscia sicula* Verhoeff and *Pseudotyphloscia alba* (Dollfus) were discovered more recently in the Eden Project, Cornwall (Gregory, 2014). The two Eden Project species were easily ruled out using the descriptions and illustrations in Gregory (2014). *Setaphora patiencei* was ruled out using Bagnall (1908). The Whipsnade species strongly resembled a photograph of *B. meeusei* from Japan in Karasawa & Goto (2014) but it was clear from the illustrations of male 1st and 2nd pleopods, and 1st pereiopod in Holthuis (1947), Taiti & Ferrara (1991) and Karasawa & Goto (2014), that the Whipsnade species was not *B. meeusei*. Having established that the Whipsnade woodlouse was a species new to Britain, MGT emailed some photographs to Stefano Taiti. Exactly 30 minutes later, he replied with a confident identification: *Anchiphiloscia pilosa* (Budde-Lund, 1913).

On a return visit on 7th February 2017 in company with Alan Outen, SJG and Keith Lugg, *A. pilosa* was found to be common in parts of the Butterfly House (Gregory, 2017).

IDENTIFICATION OF *ANCHIPHILOSCIA PILOSA*

Anchiphiloscia pilosa was re-described and illustrated by Ferrara & Taiti (1986) which is the definitive reference for identifying this species.

FIGURES 1-3: Live *Anchiphiloscia pilosa* from Whipsnade

General appearance

The general appearance of *A. pilosa* (Figures 1 - 3) may be sufficient to distinguish it from all other British species except *B. meeusei*. It has a rich, dark-, rather purplish-brown ground colour with strongly contrasting paler marbling. All the pereionites have contrastingly orange-brown hind-corners, with the same colour on the uropods and antennae. The largest Whipsnade specimen (a female) is 6.5 mm long. Relative to the familiar outdoor philosciid *Philoscia muscorum* (Scopoli), this is a smaller, more slender species, with more elongate legs and antennae and an even faster running speed.

The cephalon bears weakly developed median and lateral lobes, typical of the Philosciidae. The eyes are composed of numerous ommatidia. The antennal flagellum is composed of three elongated segments bearing stout setae. The entire upper surface of the body is covered in short, erect setae. The hind-angles of pereionite 1 are obtuse and evenly rounded, becoming increasingly more acute and more distinct towards the last pereionite (Figures 1 - 3). The pleonites are much narrower than the pereionites, with their epimera reduced and appressed, producing a strongly stepped body outline. The pleopod exopodites lack respiratory areas ('pleopodal lungs'). The telson is triangular, with slightly concave margins and with a gently rounded tip. The protopodite of the uropod bears a prominent groove on its outer margin which continues onto the adjacent exopodite (Figure 4). The endopodite and exopodite of the uropod are inserted at the same level.

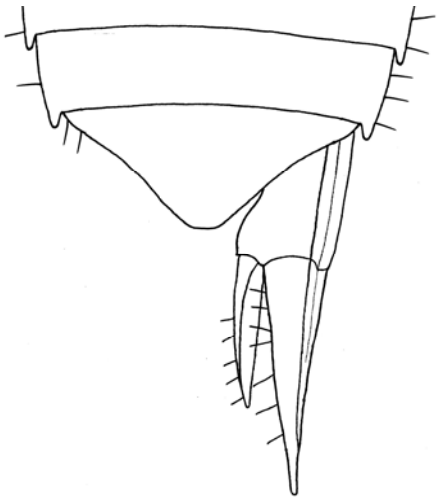

FIGURE 4: Telson and right uropod

Male characters

In males, there are important identification features on the 1st and 2nd pleopods (Figures 5 to 8). The shape of the endopodite of the 1st pleopod is particularly distinctive, tapering rather strongly in the apical quarter before a long, slender, apical part. There are two small, appressed spines near the apex of this endopodite (arrowed in Figure 6) though these are on the dorsal surface and difficult to see in ventral view, depending somewhat on the position of the endopodite in the slide preparation. The exopodite of the 1st pleopod is developed into a posterior lobe, pointing diagonally outwards (Figure 5).

Males possess a flattened and enlarged carpus of the 1st pereiopod (Figure 9) (and, to a lesser extent, the 2nd pereiopod) which is much more strongly modified than the 7th pereiopod (Figure 10).

Females and immatures are best identified by association with adult males.

FIGURE 5: Male 1st pleopods, ventral view

FIGURE 6: Male 1st pleopod endopodite apex, ventral view
Photographed using differential interference contrast (DIC) microscopy (appressed spines arrowed)

FIGURE 7: Male 2nd pleopods (both endopodites, right exopodite only), ventral view
Photographed with transmitted light (above) and dark ground (below)

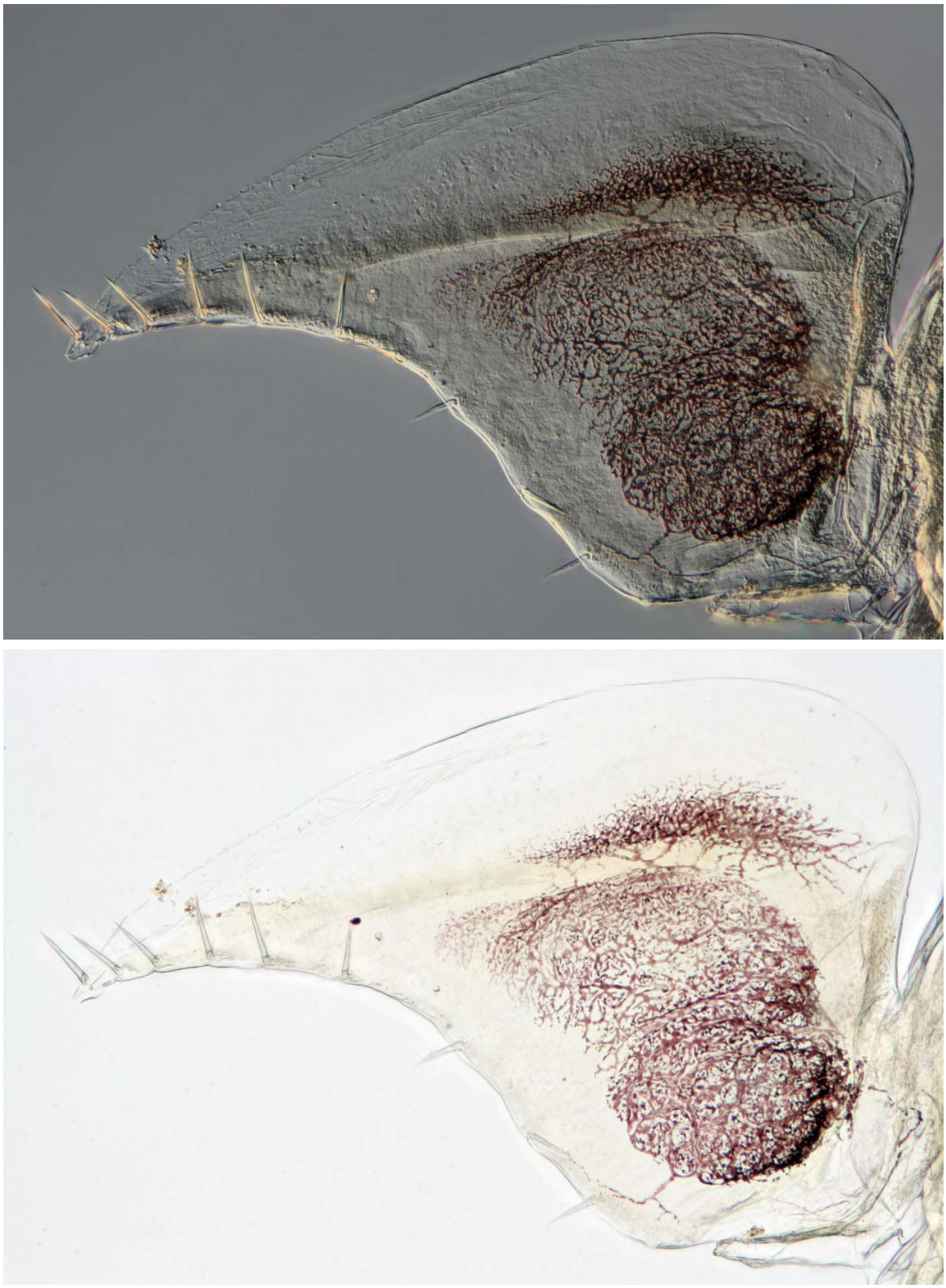

FIGURE 8: Male 2nd pleopods, left exopodite

Photographed with DIC (above) and conventional lighting (below)

FIGURE 9: Male 1st pereiopod

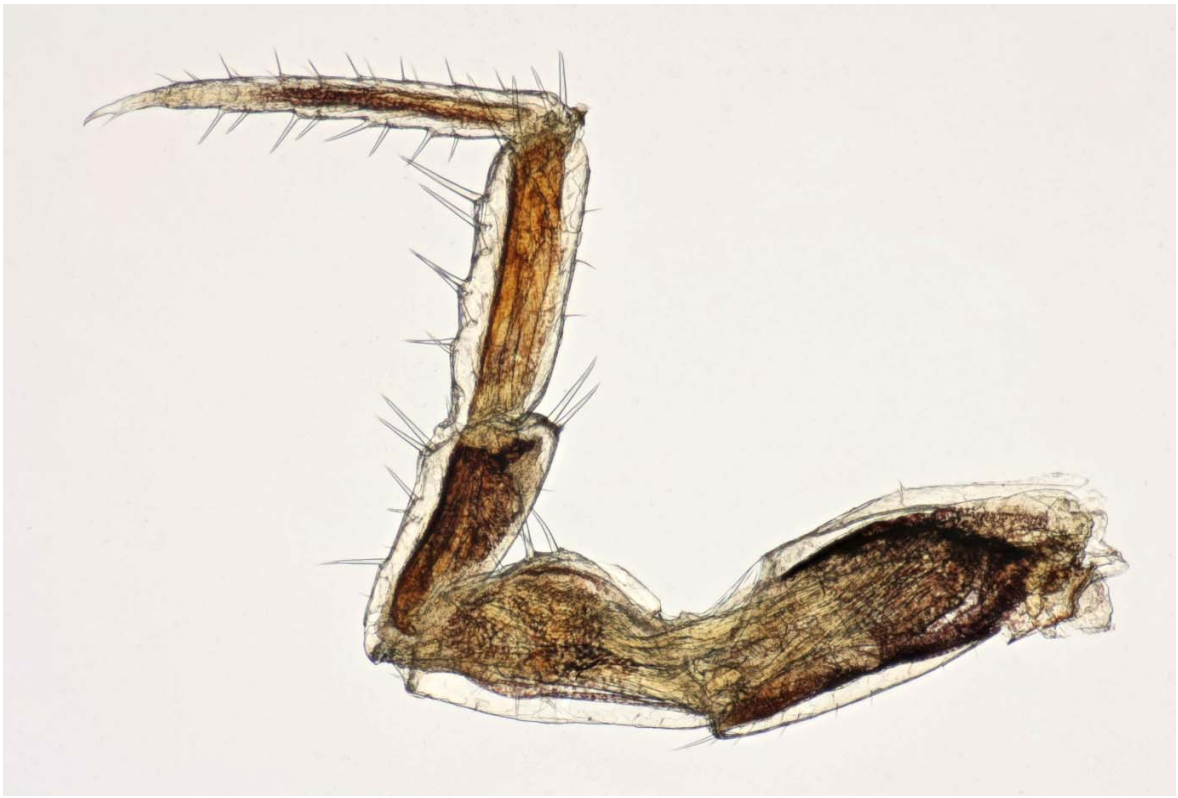

FIGURE 10: Male 7th pereiopod

DISTRIBUTION AND ECOLOGY

Anchiphiloscia pilosa is widely distributed, mostly on islands in the Indian and Pacific oceans. It was described from the Chagos Archipelago (British Indian Ocean Territory) and has since also been recorded from the Maldive Islands, Peninsular Malaysia, Java, Bali, Krakatoa, Christmas Island, and the Hawaiian Islands (Taiti & Ferrara, 1991; S. Taiti, *in litt*., January 2017).

The distribution of *A. pilosa* in European glasshouses is uncertain due to confusion with the similar species *A. balssi* (Verhoeff, 1928). This latter species was described from glasshouses in Munich, Germany, and has subsequently been recorded from glasshouses in The Netherlands (Holthuis, 1945; Berg & Wijnhoven, 1997; Berg, 2015) but remains unknown in the wild. Stefano Taiti has determined specimens from glasshouses in Utrecht and Amsterdam, The Netherlands, as *A. pilosa* (S. Taiti, *in litt*., March 2017) and although the www.pissebeddenproject.nl website (Berg, 2015) still refers to *A. balssi*, it is possible that all Dutch *Anchiphiloscia* records refer to *A. pilosa* (Matty Berg, *in litt.*, April 2017).

Illustrations of the 1st pleopod of *A. balssi* by Verhoeff (1928) and Berg & Wijnhoven (1997) suggest it is probably distinct from *A. pilosa*, though it is possible that an examination of the type material may see *A. balssi* reduced to a junior synonym of *A. pilosa*.

The occurrence of *A. pilosa* at Whipsnade is the first record for Britain.

In the wild, *A. pilosa* is regarded as a species occurring in leaf litter and along lowland streams and has been collected in mango leaf litter, mangrove litter, and by sifting leaf litter and rotting logs (Taiti & Haworth, 1996). The habitat conditions in the Butterfly House at Whipsnade Zoo are probably rather similar to these natural habitats. *A. pilosa* is very unlikely to be able to survive outdoors in the British climate.

ORIGINS OF *ANCHIPHILOSCIA PILOSA*

It is a matter of speculation whether the supplier in The Netherlands imported *A. pilosa* directly from its Indian Ocean and Pacific Ocean range or from another supplier elsewhere, and whether *A. pilosa* is established in their premises or merely passed through. Despite a recent resurgence of interest in the non-native woodlouse fauna of heated glasshouses, this is still an under-recorded environment in which discoveries can be made even from casual sampling.

ACKNOWLEDGEMENTS

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